REMARKS

An Office Action was mailed on November 6, 2003. Claims 1-15 are pending. Claims 8-15 are withdrawn from consideration.

Applicant is submitting herewith a Change of Correspondence form. All future correspondence in this matter should be directed to **Customer Number 026304**. The attorney docket number has also changed to **3158/FLK (032878-87720)**, and it is respectfully requested that the Examiner update such information in the PALM system.

Applicants have carefully reviewed the Examiner's Office Action dated November 6, 2003, in which the Examiner objected to Fig. 1 because of a certain designation by a legend such as --Prior Art--; objected the Abstract because of not being directed to the claimed invention, i.e., process of making; objected the Title because of not being descriptive; rejected claim 1 under 35 U.S.C. §102(b) as being anticipated by Maher (U.S.P.N. 5,010,443); rejected claims 2, 3 and 5 under 35 U.S.C. §103(a) as being unpatentable over Maher in view of Burn (U.S.P.N. 4,283,753); rejected claims 4 and 7 under 35 U.S.C. §103(a) as being unpatentable over Maher in view of Sheard (U.S.P.N. 3,872,360); and rejected claim 6 under 35 U.S.C. §103(a) as being unpatentable over Maher in view of Burn and Sheard.

Fig. 1 has been amended to be designated by a legend such as --Prior Art –. A replacement drawing sheet is being submitted herewith.

The Abstract of the disclosure, however, has not been amended, since the Abstract is directed to the claimed invention, i.e., a multilayer displacement element, which is not indicative of a process of making but a machine or apparatus.

The Title has been amended as --MULTLAYER DISPLACEMENT ELEMENT-- to be clearly indicative of the invention.

Claims 8-15 have been canceled from further prosecution, thus rendering moot the restriction requirement, and claim 16 has been added to clearly define the subject matter of the present invention without adding new matter. Specifically, the upper limit of the average diameter of the ceramic grains constituting said each of the ceramic layers is defined as 7 μm in order not to be overlapped with the average grain size, e.g., 10 micron, described in Burn.

In view of the amendments made above and for the reasons stated below, it is respectfully submitted that the pending claims 1-7 and 16 are now in condition for allowance; and, therefore, the Examiner's early allowance thereof is respectfully requested.

Claim Rejections under 35 U.S.C. §102(b)

The Examiner rejected claim 1 under 35 U.S.C. §102(b) as being anticipated by Maher (U.S.P.N. 5,010,443).

By way of review, the present invention is directed to a multilayer displacement element capable of displacing a ceramic layer sandwiched between two adjacent internal electrodes in a stacking direction by varying an electric field induced between the internal electrodes, as supported by page 1, lines 6-10. Since the multilayer displacement element has properties of a large electrostriction and a fast response, it has been used as a micro position determination device or a driving source or the like, as supported by page 3, lines 4-9. The displacement element in accordance with the present invention is formed by alternately stacking ceramic layers and internal electrodes, and each ceramic layer is composed of ceramic grains containing barium titanate, as defined in claim 1 (and supported by page 5, lines 11-15).

The displacement element of claim 1, generally, and the displacement element having a ceramic layer of ceramic grains of barium titanate in particular, are not disclosed or even suggested by Maher (U.S.P.N. 5,010,443). Maher describes a multilayer capacitor with a high dielectric constant. Specifically, to obtain the high dielectric constant, the capacitor has a barium titanate ceramic comprised of sintered barium titanate grains of average size within from 0.5 to 0.9 micron. Accordingly, even though Maher teaches a multilayer structure, it is absolutely clear that Maher fails to teach the multilayer displacement element with a large electrostriction.

In view of the above, it is respectively submitted that claim 1 defines a patentable invention over the prior art, including Maher (U.S.P.N. 5,010,443), and is, therefore, allowable.

Claim Rejections under 35 U.S.C. §103(a)

The Examiner also rejected claims 2, 3 and 5 under 35 U.S.C. §103(a) as being unpatentable over Maher in view of Burn (U.S.P.N. 4.283,753); rejected claims 4 and 7 under 35 U.S.C. §103(a) as being unpatentable over Maher in view of Sheard (U.S.P.N. 3,872,360); and rejected claim 6 under 35 U.S.C. §103(a) as being unpatentable over Maher in view of Burn and Sheard. This rejection is traversed.

By way of review, the present invention is directed to a multilayer displacement element capable of displacing a ceramic layer sandwiched between two adjacent internal electrodes in a stacking direction by varying an electric field induced between the internal electrodes, as supported by page 1, lines 6-10. In the displacement element formed by alternately stacking ceramic layers and internal electrodes, each ceramic layer of barium titanate has a larger diameter, e.g., an average diameter equal to or larger than 3.5 micron, as defined in claim 2 (and supported by page 5, lines 16-19). It is difficult to get a desired amount of displacement when the average diameter of barium titanate grains is less than 3.5 micron, as described in page 5, lines 16-19. Further, those portions where one grain constitutes one ceramic layer are equal to or lager than 20% of the entire area of the ceramic layer, as defined in claims 3 and 5 (and supported by page 5, lines 20-25).

In contrast, Maher describes a multilayer capacitor with a high dielectric constant, wherein the sintered barium titanate grains have an average size within from 0.5 to 0.9 micron, as described in col. 2, lines 52-55. In Maher's multilayer capacitor, capacitors with ceramic bodies of very line grains, especially around 0.8 micron diameter, tend to have both a higher dielectric constant, as described in col. 1, lines 21-28, while, in the present displacement element, it is difficult to get a desired amount of displacement when the average diameter of barium titanate grains is less than 3.5 micron, as described in page 5, lines 16-19. Accordingly, grain size requirements to obtain a higher dielectric constant in the capacitor is different from those to obtain a lager displacement in the displacement element. Further, Maher does not teach the

average diameter of the grains is equal to or larger than 3.5 micron. Still further, Maher is silent about those portions where one grain constitutes one ceramic layer.

Further, Burn also describes a multilayer capacitor with a high dielectric constant. The capacitor has metal film electrodes that are buried in a dielectric ceramic body having a high-temperature-firing granular barium titanate phase, wherein the barium titanate grains have an average size of about 10 micron, as described in col. 1, lines 7-11 and col. 7, lines 36-43. Accordingly, even though Burn teaches a multilayer structure, it is absolutely clear that Burn is absolutely silent about the multilayer displacement element with a large electrostriction. Burn does not teach those portions where one grain constitutes one ceramic layer.

Specifically, Maher and Burn are totally different from the present invention in that:

1) Maher and Burn disclose a multilayer capacitor with a high dielectric constant, while the present invention is directed to a multilayer displacement element with a large electrostriction, in which a ceramic layer sandwiched between two adjacent internal electrodes may be displaced in a stacking direction by varying an electric field induced between the internal electrodes;

2) Maher discloses a ceramic layer with a ceramic grain size of 0.5 to 0.9 micron and Burn teaches a ceramic layer with a ceramic grain size of about 10 micron. In the present invention, however, a ceramic grain size is preferably equal to or larger than 3.5 micron to obtain a desired amount of displacement. The grain size requirements to obtain a higher dielectric constant in the multilayer capacitor is absolutely different from those to obtain a lager displacement in the multilayer displacement element; and

3) None of the prior art references including Maher and Burn recognized that those portions where one grain constitutes one ceramic layer are critical ones in obtaining the desired amount of displacement in the multilayer displacement element. Accordingly, the inventive features of the present invention characterized by those portions where one grain constitutes one ceramic layer should not be treated as result-effective variables which cannot be optimized through routine skill in the prior art (see, *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977)). The optimum range of those portions where one grain constitutes one ceramic layer defined in claims 3 and 5 is not disclosed or suggested in Mayer and Burn.

Therefore, it is respectively submitted that Maher and Burn are conceptually and materially different from the present invention and that none of the features defined in the pending claims are disclosed, taught or even implied in Maher and Burn.

Accordingly, it is respectfully submitted that the Examiner's hindsight combination of Maher with Burn is entirely improper in the absence of any suggestion, teaching or motivation given in any of the prior art references to do so, and inasmuch as one skilled in the art would have no reason to make such combination.

Furthermore, even assuming, arguendo, that such combination were proper, such combination still cannot render the present invention obvious because neither Maher nor Burn disclose or even imply the present invention. Accordingly, even if every single disclosure contained in each of the references is selectively chosen and stacked together against the present invention, such combination cannot possibly suggest to an ordinary person skilled in the art the inventive features of the present invention.

Accordingly, it is respectfully submitted that each of claims 2, 3 and 5 defines an unobvious and patentable invention over and above the prior art references, including Maher, Burn and the prior art collectively or individually, and is, therefore, allowable. It is also believed that claims 4, 6, 7 and 16 directly or indirectly depending on claims 1-3, respectively, are allowable for the same reasons indicated with respect to claims 1-3 and further because of the additional features recited therein which, when taken alone and/or in combination with the features recited in claims 4, 6, 7 and 16 remove the invention defined therein further from the disclosures made in the prior art references.

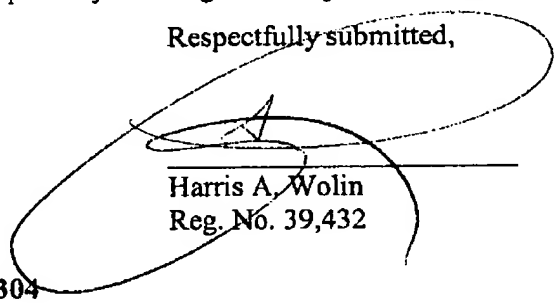
Conclusion

Applicant believes that this is a full and complete response to the Office Action. For the reasons discussed above, Applicant now respectfully submits that all of the pending claims are in complete condition for allowance. Accordingly, it is respectfully requested that the Examiner's rejections be withdrawn; and that claims 1-7 and 16 be allowed in their present form. Should the Examiner require or consider it advisable that the specification, claims an/or drawings be further amended or corrected in formal respects, in order to place the case in condition for final

allowance, then it is respectfully requested that such amendment or correction be carried out by Examiner's Amendment and the case be passed to issue. However, if for any reason the Examiner should consider this application not to be in condition for allowance, the Examiner is respectfully requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.

Any fee due with this paper may be charged on Deposit Account 50-1290.

Respectfully submitted,



Harris A. Wolin
Reg. No. 39,432

CUSTOMER NUMBER 026304
PHONE: (212) 940-8708
FAX: (212) 894-5708 (direct)
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